

PROCEEDINGS
OF THE
THOREAU MUSEUM OF NATURAL HISTORY.

MIDDLESEX SCHOOL,
CONCORD, MASSACHUSETTS.

SPECIES PLANTARUM (1753) AS A STARTING POINT
FOR LICHENOLOGICAL NOMENCLATURE.

BY R. HEBER HOWE, JR.

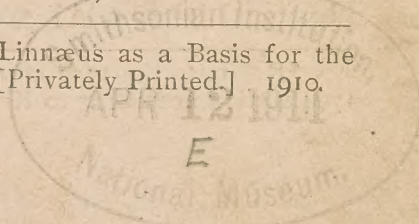
It is a matter of much doubt what the Congress at Brussels in May of the present year will do toward the adjustment of Cryptogamic nomenclature, but before this meeting takes place, I should like to have considered by lichenologists the following facts and statistics. By way of introduction, Dr. W. G. Farlow has lately* said: "The fact that it (Spec. Plantarum) was the first work in which the binomial nomenclature was methodically applied, is a sufficient reason why no work issued prior to 1753 should have been adopted as a basis of nomenclature but that fact alone is not a sufficient reason for the adoption of the Species Plantarum itself."

Leaving the consideration of Species Plantarum as the basic work for all cryptogamic nomenclature, let us turn to a consideration of it as a basis for that of lichenology, and survey its important qualifications.

We observe that in the case of lichens this work covered a large area of the world; that the future editions leading to Hoffmann and others leave "no gap;" and that the original herbarium, Wainio, Meddel. Soc. Fauna et Flora. 14:1886 (as well as the Dillenian, Crombie, Jour. Linn. Soc. 17:1880) still exists. All these facts must be considered in the selection of a favorable basis.

The eighty species of lichens recognized by Linnæus include twenty-eight present genera (Tuckerman's Genera Lich. 1872, numbers seventy, his Synopsis, pt. I and II, 1882 numbers

*A Consideration of the Species Plantarum of Linnæus as a Basis for the Starting Point of the Nomenclature of Cryptogams. [Privately Printed.] 1910.



seventy-seven) that are recognized today as follows: *Alectoria*, *Bæomyces*, *Buellia*, *Cetraria*, *Cladonia*, *Collema*, *Endocarpon*, *Ephebe*, *Evernia*, *Graphis*, *Heterothecium*, *Lecanora*, *Lecidea*, *Lepetogium*, *Nephroma*, *Parmelia*, *Peltigera*, *Physcia*, *Ramalina*, *Rocella*, *Sagedia*, *Solorina*, *Sphaerophorus*, *Stereocaulon*, *Sticta*, *Teloschistes*, *Umbilicaria* and *Usnea*. (In later editions of Linnæus, eleven species are today recognized, adding the genera *Biatora*, *Coniocybe*, *Pertusaria*, and *Urceolaria*.) These, it will at once be seen, cover the most widely known, conspicuous and important lichen genera, and include species of the three types: foliose, fruticose and crustose.

These genera also include Linnæan species, representing as wide a geographical range as could be expected for the time—in fact, a rather remarkable territory—including Alpium, Americæ, Angliæ, Arvonæ, Cambriæ, Canariis, Carpini, Europæ, Galliæ, Gronlandiæ, Helvetia, India, Insulis Archipelagi, Insula Balthici Blakulla, Italiæ, Lapponiæ, Pennsylvania, Scaniæ and Sueciæ. To tell the truth, I see no vital reason why a smaller area would not be as well, certainly a larger area could have no advantages from a basic nomenclatural standpoint. Even if the Linnæan species represented only a “limited European flora” as a starting point, I see no objections. The nomenclature, as the knowledge of the world, has resulted from a natural growth of discovery, to the future much is left.

As to the “character of the descriptions,” it is true that they are in many cases vague; yet the appended list of Linnæan species will show that, through tradition and the ehiatical advance of lichenological study from 1753 to today, out of eighty Linnæan species we still recognize all but thirteen, or 84%, with the probability that most of these thirteen would stand, if a proper recognition of priority should be granted. This points conclusively, I think, to the fact that the majority of Linnæan diagnoses (coupled with the actual and traditional knowledge of types) have been understood. Linnæus also, we find, was unerring in his recognition of lichen species, all eighty still remaining today with the group. This is not only remarkable, but, I believe, unique in his classification of cryptogamic plants.*

Dr. Farlow claims that: “The specialists who study Bryophytes, Lichens, Algæ and Fungi are entirely justified in adopting

*Refers to the 1753 edition; he placed a lichen species under *Mucor* in the 1764 edition according to Krempelhuber.

different works as a basis of nomenclature." This is most certainly true; yet I doubt if he would advocate a later work if it can be proved that Linnæus is all sufficient as a basis for lichenologist—in fact, it seems to me that, in general, the more groups that can start from the same point the better, and if, logically, the lichens can start from *Species Plantarum* of 1753, it will make one less author to include among the basic works. Let us see now what advantages would be gained by adopting Acharius' *Lichenographia Universalis* of 1810, as suggested by Dr. Farlow. It will be seen by again referring to the following list, that, of the eighty Linnæan species, Acharius accepted all but six, thus agreeing almost entirely with the famous Swedish naturalist, and showing that adoption of the Acharian work would, for the species concerned, have little or no advantage. For the genera it would, of course, mean much more. In accepting Linnæus we do not lose, however, the Acharian genera, but reach them in due time.

If lichenologists should accept the Acharian work as a basis of nomenclature, it would throw out, not only the two earlier works of Acharius, but also the important treatises of Hoffmann, Vaillant, De Candolle, Dickson, Ehrhart, Hudson, Schreber, Scopoli, Swartz, Persoon, Wahlenberg, Wulfen and others, not to mention those of Schrader, Weber, Lightfoot, Link, Bellardi, Clemente, Desfontaines, Sowerby, Gouan, Usteri, Harriman, Schleicher, Schrank, Vahl, Rebent, Pollich, Necker, Thunberg, Withering, Weis, Weigel, Westring and many more. It would also cause a great change in the present cited authorities, and affect such splendid recent works as Wainio's *Monographia Cladoniarum*.

Lastly, the discovery of the compound microscope has no doubt opened up an enormous field of study, and made possible the recognition of hundreds of lichen species unknown to Linnæus, yet I cannot see why this should in the least affect the case. To some the chemical test of species has opened a large field; but it still remains true that we must derive our nomenclature by priority from the first diagnostic describer or figurer who used the binomial system intelligently. That Linnæus described a large number of our cosmopolitan lichens successfully cannot be denied, and in this event, why should we search for later authority? By the adoption of any later work than *Species Plantarum*, I see in the case of lichens, little to be gained, and much that is eminently satisfactory to be disturbed.

LINNÆUS, 1753		ACHARIUS, 1810	1910
1.	Lichen scriptus	Graphis scripta	Graphis scripta (L.) Ach.
2.	“ geographicus	Lecidea atrovirens β L. geographica	Buellia geographica (L.) Tuck.
3.	“ rugosum	(?) Lecanora rugosa	Lecanora subfusca <i>a.</i> al- lophana Ach.
4.	“ sanguinarius	Lecidea sanguinaria	Heterothecium sanguin- arum (L.) Flot.
5.	“ fusco-ater	Lecanora fuscoatra	Lecidea fusco-atra (L.) Fr.
6.	“ calcareus	Urceolaria calcaria	Lecanora calaria (L.) Somm.
7.	“ atro-virens	Lecidea atrovirens	Buellia geographica (L.) Tuck.
8.	“ atro-albus	Lecidea atroalba	Buellia colludens (Nyl.)
9.	“ ventosus	Lecanora ventosa	Lecanora ventosa (L.) Ach.
10.	“ Fagineus	(?) Opegraphia macula- ris γ O. faginea (Pers.) Ach. (?)
11.	“ carpineus	(?) Verrucaria carpinea	Sagedia carpinea (L.) Mass.
12.	“ ericetorum	(?) Bæomyces roseus	Bæomyces ericetorum (L.) Wainio
13.	“ candelarius	Lecanora candelaria	Teloschistes concolor <i>b.</i> effuse Tuck.
14.	“ tartareus	Lecanora tartarea	Lecanora tartarea (L.) Ach.
15.	“ pallescens	Lecanora parella β L. pallescens	Lecanora pallescens (L.) Schaer.
16.	“ subfuscus	Lecanora subfusca	Lecanora subfusca (L.) Ach.
17.	“ upsaliensis	Lecanora parella γ L. upsaliensis	Ochrolechia upsaliensis (L.) Mass.
18.	“ centrifugus	Parmelia centrifuga	Parmelia centrifuga (L.) Ach.
19.	“ saxatilis	Parmelia saxatilis	Parmelia saxatilis (L.) Ach.
20.	“ omphalodes	Parmelia omphalodes	Parmelia saxatilis <i>d.</i> omphalodes (L.) Fr.
21.	“ olivaceus	Parmelia olivacea	Parmelia olivacea (L.) Ach.
22.	“ fahlunensis	Parmelia fahlunensis	Cetraria Fahlunensis (L.) Schaer.
23.	“ stygius	Parmelia stygia	Parmelia stygia (L.) Ach.
24.	“ cristatus	Collema pulposum γ C. cristata	Collema melaenum (?) cristatum (L.) Nyl.
25.	“ parietinus	Parmelia parietina	Teloschistes parietinus (L.) Norm.
26.	“ physodes	Parmelia physodes	Parmelia physodes (L.) Ach.
27.	“ stellaris	Parmelia stellaris	Physcia stellaris (L.) Fr.
28.	“ ciliaris	Borrera ciliaris	Physcia ciliaris (L.) DC.

29.	"	cylindricus	Gyrophora cylindrica	Umbilicaria cylindrica (L.) Delis.
30.	"	islandicus	Cetraria islandica	Cetraria Islandica (L.) Ach.
	"	tenuissimus	(?) Collema tenuissimum	Leptogium { subtile tenuissimum (Dicks.) Koerb.
31.	"	nivalis	Cetraria nivalis	Cetraria nivalis (L.) Ach.
32.	"	pulmonarius	Sticta pulmonacea	Sticta pulmonaria (L.) Ach.
33.	"	furfuraceus	Borreria furfuracea	Evernia furfuracea (L.) Mann.
34.	"	ampullaceus	(?) Cetraria glauca (?)
35.	"	farinaceus	Ramalina farinacea	Ramalina calicaris d. farinacea (L.) Schaer.
36.	"	calicaris	Ramalina Scopulorum	Ramalina calicaris (L.) Fr.
37.	"	fraxineus	Ramalina fraxinea	Ramalina calicaris a. fraxinea (L.) Fr.
38.	"	fuciformis	Rocella fusciformis	Rocella fusciformis (L.) Ach.
39.	"	prunastri	Evernia prunastri	Evernia prunastri (L.) Ach.
40.	"	juniperinus	Cetraria juniperina	Cetraria juniperina (L.) Ach.
41.	"	caperatus	Parmelia caperata	Parmelia caperata (L.) Ach.
42.	"	glaucus	Cetraria glauca	Cetraria glauca (L.) Ach.
43.	"	aquaticus	(?) Endocarpon Weberi	Endocarpon miniatum var. aquaticum (?)
44.	"	resupinatus	Nephroma resupinata	Nephroma tomentosum (Hoffm.) Koerb.
45.	"	venosus	Peltidea venosa	Peltigera venosa (L.) Hoffm.
46.	"	aphthosus	Peltidea aphthosa	Peltigera aphthosa (L.) Hoffm.
47.	"	arcticus	Nephroma polaris	Nephroma arcticum (L.) Fr.
48.	"	caninus	Peltidea canina	Peltigera canina (L.) Hoffm.
49.	"	croceus	Solorina crocea	Solorina crocea (L.) Ach.
50.	"	miniatum	Endocarpon miniatum	Endocarpon miniatum (L.) Schaer.
51.	"	velleus	Gyrophora vellea	Umbilicaria vellea (L.) Nyl.
52.	"	pustulatus	Gyrophora pustulata	Umbilicaria pustulata (L.) Hoffm.
53.	"	proboscideus	Gyrophora proboscidea	Umbilicaria proboscidea (L.) Stenh.
54.	"	deustus	Gyrophora deusta	(?) Umbilicaria flocculosa Hoffm.
55.	"	polyphyllus	Gyrophora heteroidea β G. polyphylla	Umbilicaria polyphylla (L.) Hoffm.
56.	"	polyrhizos	Gyrophora spadochroa	Umbilicaria polyrhizos (L.) Fr.

57.	"	cocciferus	Cenomyce coccifera	Cladonia coccifera (L.) Willd.
58.	"	cornucoioides	Cenomyce coccifera δ C. cornucopioides	Cladonia { coccifera (L.) Willd. squamosa (Scop.) Hoffm.
59.	"	pyxidatus	Cenomyce pyxidata	Cladonia pyxidata (L.) Fr.
60.	"	fimbriatus	Cenomyce pyxidata γ C. fimbriata	Cladonia fimbriata (L.) Fr.
61.	"	gracilis	Cenomyce ecmocyna γ C. gracilis	Cladonia gracilis (L.) Willd.
62.	"	digitatus	Cenomyce deformis γ C. digitata	Cladonia digitata (L.?) Schaer.
63.	"	cornutus	Cenomyce cornuta	Cladonia cornuta (L.) Schaer.
64.	"	deformis	Cenomyce deformis	Cladonia deformis Hoffm.
65.	"	rangiferinus	Cenomyce rangiferina	Cladonia rangiferina (L.) Web.
	"	alpestris	Cenomyce rangiferina γ C. alpestris	Cladonia alpestris (L.) Rabenh.
	"	sylvaticus	Cenomyce rangiferina β C. sylvatica	Cladonia sylvatica (L.) Hoffm.
66.	"	uncialis	Cenomyce uncialis	Cladonia uncialis (L.) Web.
67.	"	subulatus	Cenomyce ecmocyna δ C. subulata	Cladonia fimbriata v. subulata (L.) Wainio
68.	"	paschalis	Stereocaulon paschale	Stereocaulon paschale (L.) Ach.
69.	"	fragilis	Sphaerophoron fragile	Sphaerophorus fragilis (L.) Pers.
90.	"	Roccella	Roccella tinctoria	Roccella tinctoria DC.
71.	"	plicatus	Usnea plicata	Usnea plicata (L.) Web.
72.	"	barbatus	Usnea barbata	Usnea plicata v. barbata (L.) R. H. Howe
73.	"	jubatus	Alectoria jubata	Alectoria jubata (L.) Ach.
74.	"	lanatus	Cornicularia lanata	Parmelia lanata (L.) Wallr.
75.	"	pubescens	Cornicularia pubescens	Ephebe pubescens (L.) Fr.
76.	"	chalybeiformis	Alectoria jubata b. A. chalybeiformis	Alectoria jubata b. chalybeiformis (L.) Ach.
77.	"	hirtus	Usnea plicata a. U. hirta	Usnea florida (L.) Web. Usnea barbata a. florida * hirta Fr. of Tuck.
78.	"	vulpinus	Evernia vulpinus	Evernia vulpinus (L.) Ach.
79.	"	articulatus	Usnea barbata γ U. articulata	Usnea articulata (L.) Hoffm.
80.	"	floridus	Usnea florida	Usnea florida (L.) Web.

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A LIST OF *REPTILIA* COLLECTED AT
CONCORD, MASS.

BY OLIVER G. RICKETSON, JR.

The following is a list of Reptilia collected since 1901 at Concord, Massachusetts. All the specimens here named, unless otherwise indicated, are represented in the collection in the Thoreau Museum of Natural History.

In the Bulletin of the Middlesex School Natural History Society, No. 2, April, 1904 (supplement to the Anvil) was published the first list of local Reptilia, numbering fifteen species

REPTILIA.

ORDER: *Chelonia* Turtles.

Family: *Chelydridae*.

Chelydra serpentina (L.) Schweigger.

Snapping turtle.

Common in brooks, ponds, and streams, and often seen in the spring crossing roads.

March 6 to ———.

Family: *Cinosternidae*.

Cinosternum (*Aromochelys*) *odoratum* (Latreille) Bonaparte.

Musk turtle.

This species appears to be quite common in the Concord River, and a few are taken each year in Spencer brook.

March 14 to ———

Family: *Testudinidae*.

Chrysemys picta (Schneider) Gray.

Painted turtle.

Common in the brooks and ponds.

March 9 to December 11.



Clemmys (Chelopus) guttata (Schneider) Strauch.

Spotted turtle.

Abundant in the brooks, and occasionally in Bateman's pond.

February 23 to ———

Clemmys (Chelopus) insculpta (Leconte) Strauch.

Sculptured tortoise.

Common in the brooks, not uncommonly found during winter thaws.

Emys blandingii (Holbrook) Strauch.

Blanding's turtle.

In the Boston Society of Natural History, No. 454, there is the carapace and plastron of a specimen taken at Concord, Mass., by Henry D. Thoreau.

Cistudo carolina (L.) Gray.

Box tortoise.

Though we have never taken it in Concord, it has been found in the town near the boundary of Lincoln. Dr. Walter Faxon tells us he saw one as long ago as 1890, on the edge of Burlington, Mass. Three specimens, all from near Fairhaven Bay, were given to Mr. William Brewster, two by Mr. Henry P. Richardson and one by Mr. Adams Tolman. Mr. Richardson tells us his two were captured in 1907 or 1908 on the Charles Francis Adams estate, and another from Heath's bridge was taken in 1910. Mr. Tolman reports that the one he gave Mr. Brewster was caught on Thoreau Street, and that he has taken two others in Concord.

ORDER: *Ophidia* Snakes.

Family: *Colubridae*.

Diadophis punctatus (L.) Baird and Girard.

Ring-necked snake.

Rather uncommon.

Liopeltis vernalis (Harlan) Cope.

Grass snake.

Fairly common.

April 22 to October 12.

Zamenis constrictor (L.) Boulenger.

Black snake.

Not uncommon, especially about brooks.

Osceola (Ophibolus) doliata triangula (Boie) Cope.

Milk or chicken snake.

Common in dry situations.

May 16 to ———

Natrix fasciata sipedon (L.) Cope.

Water snake.

Common in Bateman's pond, and occasionally found in brooks.

May 17 to ———

Storeria dekayi (Holbrook) Baird and Girard.

Dekay's snake.

Common under flat stones.

Storeria occipitomaculata (Storer) Baird and Girard.

Spotted-necked snake.

Rather uncommon.

March 27 to ———

Eutaenia saurita (L.) Baird and Girard.

Ribbon snake.

Rather uncommon.

March 20 to ———

Eutaenia sirtalis (L.) Cope.

Garter snake.

Abundant.

The color phase *pallidula* is also common.

March 7 to ———

MAY 10, 1913.

VOL. I, pp. 15-25.

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THE *USNEAS* OF THE WORLD, 1752-1912.

WITH CITATIONS, TYPE LOCALITIES, ORIGINAL DESCRIPTIONS AND KEYS.

PART I. NORTH AMERICA.

BY R. HEBER HOWE, JR., ASSISTED BY J. P. WARBURG AND C. P. WINSOR.

The purpose of this paper is to provide lichenologists with the citations, original descriptions, and type localities of all described species of the genus *Usnea*. These have been brought together from many sources, some of which, *e. g.* Stirton, are exceedingly difficult of access. By their compilation it is hoped to aid the advancement of our knowledge of this cosmopolitan genus.

Part I deals with only the *Usneas* of North America. These are numbered and all those which have a type locality more specifically stated than North America, have been located upon the accompanying map. There then follow citations, type localities, and original descriptions. A key for the species of this continent is appended, based largely, by necessity, upon the salient points gathered from the descriptions, as material of all the described species is impossible of access. Whenever the disposition of the type specimen is known, the location of the herbarium is given.

LIST OF USNEAS DESCRIBED FROM NORTH AMERICA.

1. *Usnea angulata*.
2. *barbata*.
3. *californica*.
4. *cavernosa*.
5. *trichodea* var. *ciliata*.
6. *dasypogoides* var. *cladoblephara*.
7. *longissima* var. *corticata* var. novo.
8. *articulata* var. *dimorpha*.
9. *endochrysea*.
10. *filaris*.
11. *filipendula*.
12. *incarnata*.
13. *florida* var. *intermedia*.
14. *jamaicensis*.
15. *lacunosa*.
16. *linearis*.
17. *lorea*.
18. *florida* var. *major*.
19. *mutabilis*.
20. *plicatus*.
21. *florida* var. *rubiginea*.
22. *scoparia*.
23. *sphacelata*.
24. *florida* var. *strigosa*.
25. *ceratina* var. *subplicata*.
26. *subfusca*.
27. *trichodea*.
28. *variegata*.

SPECIES WITH CITATIONS, TYPE LOCALITIES, AND ORIGINAL
DESCRIPTIONS.

1. *Usnea angulata* Ach.
"Americae Septentrionalis." (Synop. Method. Lich.
307. 1814.)

“thallo pendulo flexuoso subsimplici angulato cinereo-pallido, angulis acutis scabris, fibrillis horizontalibus approximatis simplicibus brevibus tereti-attenuatis.” l. c.

Type in the Acharian Herbarium, Helsingfors.

2. *Lichen barbatus* Linn. = *articulata* Hoffm.

“*Americae septentrionalis.*” Pennsylvania. (Spec. Pl. 2: 1155. 1753.)

“filamentosus pendulus subarticulatus, ramis patentibus.” l. c.

Type in the Linnean Herbarium, Linnean Society, London.

3. *Usnea californica.* Herre.

“head of Alpine Creek Cañon,” San Mateo Co., California. (Proc. Wash. Acad. Sci. 7: 345. 1906.)

“Thallus large, stout, terete, much elongated and pendulous, smooth; the coarse branches irregularly divided and widespread, readily traceable nearly to the extremity of the plant; secondary branches long and sub-divided; sparsely clothed with fibrils; branchlets and fibrils occasionally sorediate; color gray-green to yellowish green. Fruiting specimens rare; apothecia borne on second branches, terminal or lateral, small to medium size; concolorous or tan.” l. c.

Type: No. 194, Stanford University Herbarium.

4. *Usnea cavernosa* Tuck.

“in oris Lacus Superioris.” (Agassiz and Cabot, Lake Superior, etc. 71. 1850.)

“Thallo pendulo laxo molli glaberrimo tereti compresso plus minus cavernoso ochroleuco, ramis primoribus simpliciusculis subventricosis attenuatis ad apices dichotome ramosis, ramulis ultimis tenuissime capillaceis; apotheciis sessilibus radiatis disco albido-pruinoso demum subcarneo margine obscuriori evanescente.” l. c.

Type in the Tuckerman Herbarium, Botanic Museum, Cambridge. Mass.

5. *Usnea trichodea* var. *ciliata* Müll. Arg.

Dallas, Tex. (Flora 60: 77. 1877.)

“thallus more *U. trichodeae* tenuis, laevis et albido-cinereus, at longe aut longissime ramigerus et more *U. longissimæ* dense fibrillosus; apothecia parva, 1.5 — 3. mm. lata, raro diametro 6 mm. attingentia, ambitu ciliis 3 — 8 circ. 2 — 5 mm. longis ornata, dorso subinde pauci-fibrilligera et elongatione ramilli deflexi saepius praedita, discus glauco-albidus v. albo-carneus; sporae ellipsoideae v. subgloboso-ellipsoideae, 5 — 8 longae.” l. c.

Type in the Boissier Herbarium, Chambésy.

6. *Usnea dasypogoides* var. *cladoblephara* Müll. Arg.

Jamaica. (Flora 69: 254. 1886.)

“rami maiores minute papilloso reliqui tenues laevissimi; apothecia parvula, ad marginem et paullo infra marginem ciliis pro parte simplicibus elongatis et aliis maioribus diametro apotheciorum 2 — 4 plo longioribus et patenter ramilligeris ornata.” l. c.

In the Boissier Herbarium, Chambésy.

7. *Usnea longissima* var. *corticata* var. novo.

Barclay Sound, British Columbia. 1909. Macoun.

Similis *longissimae* sed cum axialibus filamentis corticatis.

Type No. 1776 author's Herbarium.

8. *Usnea articulata* var. *dimorpha* Müll. Arg.

Cuba. (Flora 74: 372. 1891.)

“straminea, rami tenues et laevissimi, parce articulati, ramillis modice numerosis aliis capillaribus elongatis laevibus aut minute nodulosis et simul aliis intermixtis confertim divaricato-ramosissimis et crebre tuberculosus quasi nodulosis praediti; apothecia parvula, straminea, crebre ciliata, cilia breviuscula, simplicia et rudimentarie divaricato-ramulosa et partim nodulosa. Habitu ad *U. dasypogoidis* v. *exasperatum* Müll. Arg. accedit, sed rami minus dense ramilligeri, tenuiores et distincte articulati, parce impressuli, ramilli demum dimorphi.” (Eggers Flor. Ind. Occ. exs. n. 5015.) l. c.

Type in the Boissier Herbarium, Chambésy.

9. *Usnea endochrysea* Strt.

“Alabama.” (Scot. Nat. 6: 107. 1881.)

“Similis *U. hirtæ* sed fibrillis medullaribus exterioribus rubentibus κ pallide flavescentibus, interioribus albidis κ —; apothecia mediocria testaceo lutescentia fibrilloso-ciliata; sporae, .009 — .011 \times .0055 — .007 mm.” l. c.

In the Acharian Herbarium, Helsingfors.

10. *Usnea filaris* Ach.

“America.” (Synop. Method. Lich. 307. 1814.)

“thallo filiformi virescente; apotheciis sparsis parvulis setoso-ciliatis.” l. c.

In the Acharian Herbarium, Helsingfors.

11. *Usnea filipendula* Strt.

“America bor.” (Scot. Nat. 6: 104. 1881.)

“Similis *U. dasypogae* sed thallo gracili elongato et pendulo aequae ac minute et crebre papilloso-aspero; fibrillae medullares κ — fl. dein rufo-aurantiacaе, demum rubentes.” l. c.

12. *Usnea incarnata* Smith = *U. trichodea*.

“Nova Scotia” Menzies. (Rees, The Cyclopaedia, Arts, Sci., Lit. 37: 1817.)

“Frond pendulous, pale, smooth, capillary, cracked, with numerous horizontal fibres; the medullary thread reddish. Disks lateral, concave, fringed with long distant bristles.” l. c.

Type in the Smith Herbarium, Linnean Society, London.

13. *Usnea florida* var. *intermedia* Michx.

“Carolina.” (Fl. Bor.-Am. 2: 332. 1803.)

“minor, divaricator; scutellis minoribus, cineritiis.” l. c.

14. *Usnea jamaicensis* Ach.

“Jamaicae” Swartz. (Lich. Univ. 619. 1810.)

“thallo divaricato scabrido pallido dichotomo, ramis patentissimis effusis, apotheciis peltato-subsessilibus subtus laevibus appendiculatis proliferisque concaviusculis concoloribus, ambitu nudo.” l. c.

In the Acharian Herbarium, Helsingfors.

15. *Usnea lacunosa* Willd.

"America boreali, Michigan." (Willd. ex Del. mscr.)
Nyl. (Syn. Lich. 271. 1858-60.)

"Thallus albo-flavescens vel pallescens pendulus foveolato-scrobiculatus angulosus (subtriqueter) ramosissimus, ramis teretibus attenuatis intricato-implexis sparse fibrillosis; apothecia sat parva albida vel albido-glauescentia, margine receptaculari fibrilloso-ciliato; sporae parvae longit. 0,007-8 millim., crassit. 0,005 millim." l. c.

16. *Usnea linearis* Schneider =? *Ramalina linearis*.

North America. (Guide Study Lich. 167. 1898.)

"Thallus medium, of several main branches, bearing numerous long, slender, cylindrical branches; greenish-gray." l. c.

17. *Usnea lorea* Fries.

"America meridionalis." (Syst. Orb. Veg. 282. 1825.)

"elongata, pendula, laevigata, glabra, subsimplex, fuscescens, fibrillis lateralibus nullis, apotheciis pallidis subintegris appendiculatis." l. c.

18. *Usnea florida* var. *major* Michx.

"Carolina." (Fl. Bor.-Am. 2: 332. 1803.)

"scutellis luteolo-pallidis." l. c.

19. *Usnea mutabilis* Strt.

"Alabama." (Scot. Nat. 6: 107. 1881.)

"Similis *U. cornutae* sed fibrillis medullaribus exacte ut in *Usnea endochrysea*." l. c.

20. *Lichen plicatus* Linn.

"Americae borealis." (Spec. Pl. 2: 1154. 1753.)

"filamentosus pendulus, ramis implexis, scutellis radiatis." l. c.

No type specimen exists in the Linnean Herbarium, London.

21. *Usnea florida* var. *rubiginea* Michx.

"Canada." (Fl. Bor.-Am. 2: 332. 1803.)

"minus hirta, rubigineo-rubens; scutellis concoloribus." l. c.

22. *Usnea scoparia* Fée.

“L’Amérique du Nord.” (Dict. Class. d’Hist. Nat. 16: 482. 1830.)

“Les ramifications sont roides, presque égales dans toute leur longueur, comme tronquées au sommet, presque simples et garnies seulement de ramuscules courts formant un angle aigu avec le rameau qui les supporte; leur couleur est grisâtre; elles sont couverte d’un nombre considérable de petites sorédies d’un blanc jaunâtre; elles n’ont point d’arilles.” l. c.

23. *Usneas sphacelata* R. Brown. “Melville Island.” (Chloris Melv. 49. 1823.)

“thallo erectiusculo fruticuliformi, ramis primariis ochroleucis nigro-vittatis laevibus, ultimis attenuatis nigris: sorediis confertis concoloribus ochroleucisve.” l. c.

24. *Usnea florida* var. *strigosa* Ach.

“America septentrionali” Swartz. (Method. Lich. 2: 310. 1803.)

“thallo subcrustaceo fruticuloso tereti erecto, ramis sparsis brevibus rigidis undique confertissime fibrilloso-strigosis; orbillis latissimis carneo-pallidis sublobatis dentato-radiatis.” l. c.

Type in the Acharian Herbarium, Helsingfors.

25. *Usnea ceratina* var. *subplicata* Merrill.
(Lich. Exc. No. 130.)

“Matinicus Island, Maine.”

Nomen nudum.

26. *Usnea subfusca* Strt.

“Prope Owen Sound in Canada.” (Scot. Nat. 6: 108. 1881.)

“Similis *U. floridae* sed stipitibus et ramis primariis papilloso-asperis, axi centrali crasso solido rufescente, centro rufo-fusco. Thallus extus K—C pallide flavescens.” l. c.

27. *Usnea trichodea* Ach.

“nova Scotia.” (Method Lich. 2: 312. 1803.)

“thallo subcrustaceo filamentoso tenerissimo tereti diffuso albo-pallescente, lorulis capillaceis ramosis fibrillis subsecun-

dis; orbillis concoloribus margine tenui inflexo nudo integro.”
l. c.

Type in the Acharian Herbarium, Helsingfors.

28. *Usnea variegata* Strt.

“Niagara Falls.” (Scot. Nat. 6: 105. 1881.)

“Thallus cinereo-glauescens, cinereo-virescens vel cinereus, gracilis, elongatus, pendulus, fibrillosus; axis centralis fusco-rufescens (praesertim stipitum) crassiusculus; fibrillae medullaris (K— vel vix tinctae), eae axin tegentes I caerulescentes dein violaceae.” l. c.

KEY.

Neuropogon.

Apothecial disc black **sulphurea***
= *sphacelata*

Leptinae

Apothecial disc never black

Chondroid axis $\frac{1}{2}$ diameter of thalline filament (internodal measurement)

Erect *mutabilis*

Non-erect (pendulous) *barbata*

= **articulata**

Branches dimorphous v. *dimorpha*

Mesinae

Chondroid axis $\frac{1}{3}$ diameter of thalline filament

Erect or sub-erect

Esorediate

Branches strigose, attenuate *strigosa*

Branches not strigose

Axis hyaline **florida**

= *major*

Axis rufus *subfusca*

Sorediate

Virescent

KOH — **hirta**

= *intermedia*

KOH + *endochrysea*

Reddish *rubiginea*

Not erect, (pendulous)

Primary branches over $\frac{1}{2}$ mm. diameter

Thallus foveolate *cavernosa*

= *lacunosa*

Thallus not foveolate

Branches espinulose, axis hyaline

Branches evolute

Thallus under 30 cm. long	.	.	<i>plicata</i>
			= <i>linearis</i>
Thallus over 30 cm. long	.		<i>californica</i>
Branches naked	.	.	<i>subplicata</i>
Branches spinulose			
Thallus verrucose			
Axis hyaline			
Thallus cinereus	.	.	<i>scoparia</i>
			= <i>dasypoga</i>
Thallus yellow	.	.	v. <i>cladoblephara</i>
Axis rufus	.	.	<i>variegata</i>
Thallus papillate—asperate	.	.	<i>filipendula</i>
Primary branches under $\frac{1}{2}$ mm. diameter			
Thallus smooth	.	.	<i>trichodea</i>
			= <i>filaris</i>
			= <i>incarnata</i>
			= v. <i>ciliata</i>

Pachynae

Chondroid axis $\frac{1}{2}$ diameter of thalline filament

Primary branches angulate (KOH +) . . *angulata*

Primary branches terete

With lateral fibrils . . . v. *corticata*

Without lateral fibrils (naked) . . . ***gracilis***
= *lorea?*

Note: *U. jamaicensis* is indeterminable.

* Names in black-faced type indicate that species were not described from No. America, but are used here only as synonyms in the key.



Map showing Type Localities.

QH
1
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September 24, 1913.

Vol. I, pp. 27-29.

PROCEEDINGS
OF THE
THOREAU MUSEUM OF NATURAL HISTORY.
MIDDLESEX SCHOOL,
CONCORD, MASSACHUSETTS. /

THE
FOLIACEOUS AND FRUTICOSE LICHENS
OF
CONCORD, MASSACHUSETTS

With Keys to all New England Species.

BY R. HEBER HOWE, JR.

The following work on the lichens of this township covers an investigation begun in 1904. The keys it is hoped will add to its value, and make it useful as a manual of New England lichens.

DESCRIPTIVE FLORA.

DIVISION: THALLOPHYTA. (Lower, or non-vascular, cellular cryptogams.)

Plants whose vegetative body consists of a thallus, which rarely shows more than a rudimentary differentiation of stem, leaf or root; without vascular or woody tissue, and with sexual and asexual modes of reproduction.

SUBDIVISION: FUNGI.

Cellular plants, distinguished by their lack of chlorophyl, and reproducing mainly asexually.

CLASS: LICHENES (Tournefort) Micheli.

Cellular, mostly thalloid plants, originating through a symbiotic or parasitic† relation of ascomycetous or basiomycetous fungi and cellular or filamentous algae, forming what has been considered a compound thallus or so-called consortium.

† To saprophytic.

SUBCLASS: ASCOLICHENES Zahlbr.

Lichens in which the spores are enclosed in asci.

ORDER: GYMNOCARPALES (Luyken) Fr.

Apothecia open, hymenium visible. Lichens of this order are called gymnocarpous.

SUBORDER: CYCLOCARPINEÆ Wain.

Apothecia discoid; spores maturing in asci: no capillitium.

GROUP: RADIATÆ Hue.

Thalline structure radially symmetrical; attached to substratum without rhizoids. Gonidia homœomerous.

FAMILY: USNEACEAE Eschw.

Thallus fruticose or filamentous, radial, with contiguous cortex: cylindrical or angular, bifacial or deformed. Gonidia *protococcoid*. Apothecia lecanorine. Spores monoblast, bilocular or muriform—hyaline or colorate.

TRIBE: USNEAE Hue.

Cortical structure complex (decomposed). Medulla arachnoid.

GENUS: USNEA (Dill.) Adans.

Cortex cylindrical or angular. Medulla stuppeous. Axis chondroid. Apothecia ciliate, disk pale. Asci clavate, 8 spored. Spores ellipsoid, monoblast, hyaline.

SERIES: MESINAE Zahlbr.

Axis 1-3 diameter of thalline filament.

Erect or sub-erect

Esorediate *florida*

Sorediate

Virescent *hirta*

Reddish *rubiginosa*

Not erect (pendulous)

Primary branch over 1-2 mm. diameter at base.

Thallus foveolate *cavernosa*

Thallus not foveolate

Branches espinulose,

Branches evolute *plicata*

Fibrils lacking, v. *Huei*

Branches spinulose *dasyptoga*

Primary branch under 1-2 mm. diameter at base

Thallus smooth *trichodea*

SERIES: PACHYNAE Zahlbr.

Axis 1-2 diameter of thalline filament.

Primary branches angulate *angulata*

Primary branches terete, farinaceous *longissima*

U. florida (L.) Web.

Thallus caespitose (8 cm. alt.), virescent, branches terete, verrucose, fibrils stipate, subequiform. Apothecia discoid, ciliate, terminal, disk buff. Spores $4 - 8 \mu \times 3 - 6 \mu$. On trees.

U. florida f. *hirta* (L.) Ach.

Branches and fibrils terminally sorediate. Apothecia reduced or wanting. On trees.

U. florida f. *rubiginea* Michx.

Like the last: Thallus tinged with reddish.

U. trichodea Ach.

Thallus pendulous (12 cm. alt.) virescent, branches terete, smooth, fibrils capillaceous, tortuous. Apothecia unobserved.* On trees.

GENUS: *LETHARIA* (Th. Fr.) Zahlbr.

Cortex subterete to bifacial, medulla arachnoid, axis with chondroid filaments. Apothecia entire or ciliate, disk dark. Asci clavate, 8 spored. Spores ellipsoid, monoblast, hyaline.

L. thamnodes (Flot.) Hue.

Thallus caespitose (8 cm. alt.), virescent, branches subterete or deformed, evolute, scurfy. Apothecia unobserved. On trees and old wood.

* All remarks apply to local material.

(To be continued.)

PROCEEDINGS
OF THE
THOREAU MUSEUM OF NATURAL HISTORY.
MIDDLESEX SCHOOL,
CONCORD, MASSACHUSETTS.

A LIST OF *MOLLUSCA* COLLECTED AT
CONCORD, MASS.

BY D. C. HAWKINS.

The following is a preliminary list of Shells from Concord, Massachusetts, collected since 1901. This list comprises about one-third of the species that should be found in the township. All the specimens here given are represented in the collection of the Thoreau Museum of Natural History, and were determined through the kindness of Mr. C. W. Johnson of the Boston Society of Natural History.

MOLLUSCA.

- Family: *Unionidae*. Fresh-water mussels.
 Anodonta cataracta Say.
 Anodonta implicata Say.
 Unio complanatus Sol.
 Lampsilis radiatus Gmel.
- Family: *Viviparidae*. Fresh-water snails.
 Campeloma desisa Say.
- Family: *Lymnaeidae*. Pond-snails.
 Planorbis campanulatus Say.
- Family: *Physidae*. Sinistral-formed pond-snails.
 Physa heterostropha Say.
- Family: *Succineidae*. Amber-snails.
 Succinia ovalis Say.
 Succinia ovalis var. *totteniana* Lea.
- Family: *Helicidae*. Garden snails.
 Polygyra albolabris Say.
- Family: *Philomycidae*. Shell-less slugs.
 Philomycus carolinensis Bosc.
- Family: *Limacidae*. Internally shelled slugs.
 Limax flavus Linn.
 Agriolimax agrestis Linn.
- Family: *Zonitidae*. Externally shelled snails.
 Zonitoides arboreus Say.

PROCEEDINGS
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MIDDLESEX SCHOOL,
CONCORD, MASSACHUSETTS.

A LIST OF *BATRACHIA* COLLECTED AT
CONCORD, MASS.

BY T. M. CARNEGIE, 3D.

The following is a list of Batrachia collected since 1901 at Concord, Massachusetts. All the specimens, unless otherwise indicated, are represented in the collection in the Thoreau Museum of Natural History.

In the Bulletin of the Middlesex School Natural History Society, No. 1, Supplement to *THE ANVIL*, March, 1904, was published the first list of local Batrachia, numbering 11 species.

BATRACHIA.

ORDER URODELA: Tailed Amphibia.

Family: *Amblysomidae*.

Amblystoma punctatum (Linne) Baird.

Large-spotted salamander.

Rare under stones and logs.

Amblystoma Jeffersonianum (Green) Baird.

Jefferson's salamander.

Under old logs in damp places.

Family: *Plethodontidae*.

Plethodon cinereus cinereus (Green) Cope.

Ashy salamander.

Fairly common under stones, logs and leaves in damp places.

Plethodon cinereus erythronotus (Green) Cope.

Red backed salamander.

Found in damp places under logs, stones, etc.

Family: *Desmognathidae*.

Desmognathus fusca (Rafinesque) Baird.

Dusky salamander.

Uncommon, brooks.

Family: *Pleurdelidae*.

Diemyctylus veridescens (Rafinesque) Hallowell.

Green ebbet. Newt.

Fairly common in ponds and pools.

E

ORDER ANURA: Tailless Amphibia.

Family: *Bufonidae*.

Bufo lentiginosus Fowleri Cope.

Fowler's toad.

Common.

Bufo lentiginosus americanus (Holbrook) Cope.

American toad.

Common in gardens.

Family: *Hylidae*.

Hyla Pickeringii (Storer) Leconte.

Piping tree frog.

Common for several weeks during the spring.

Hyla versicolor Leconte.

Common tree frog.

Found on trees, vines and fences.

Family: *Ranidae*.

Rana pipiens Gmelin.

Leopard frog.

Common in ponds and streams.

Rana palustris Leconte.

Pickerel frog.

Found in cold streams, ponds, and in grassy meadows.

Rana clamata Daudin.

Green frog.

Common in ponds and streams.

Rana Catesbeiana Shaw.

Bull frog.

Lakes, ponds and rivers.

Rana sylvatica Leconte.

Wood frog.

Found in the woods.

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With Keys to all New England Species.

BY R. HEBER HOWE, JR.

(Continued.)

GENUS: RAMALINA Ach.

Cortex bifacial or subterete, medulla arachnoid, axis rarely with adglutinated filaments. Apothecia entire or ciliate, disk pale. Asci clavate, 8 spored. Spores ellipsoid or fusiform, bilocular, hyaline, straight or curved.

SECTION: ELLIPSOSPORAE Howe.

Asci containing 8 hyaline ellipsoid or oblong spores.

SERIES: MYELOPOEAE Wain.

Medulla arachnoid, cortex thick (65-80 μ) hyphæ divaricate above gonidia.

Thallus sorediate or soraliate

Laciniae powdery-sorediate *pollinaria*

Laciniae never powdery-sorediate (soraliate)

Apices acuminate (alt. 5cm.) *farinacea*

Apices erose (alt. 1.5cm.) *intermedia*

Thallus never sorediate or soraliate

Laciniae bifacial

Laciniae linear, connivo-canaliculate *canaliculata*

Laciniae never linear, etc. (compressed)

Laciniae channeled, apothecia terminal . v. *subfastigiata*

Laciniae never channeled

Laciniae narrow, apothecia scattered . *fastigiata*

Laciniae wide, apothecia lateral . v. *subampliata*

Laciniae subterete, torulose *Willeyi*

SERIES: FISTULARIAE Wain.

Thallus foraminous or fistulous	.	.	.	
Apices multifid-dendroid	.	.	.	<i>pollinariella</i>
Apices not multifid-dendroid	.	.	.	<i>dilacerata</i>

SECTION: FUSISPORAE Howe.

Asci containing 8 hyaline fusiform spores	.	.	.	<i>stenospora</i>
	Me.	N. H.	Vt.	Mass. R. I. Conn.

Ramalina pollinaria (Westr.) Ach.			—	+	+	
farinacea (L.) Ach.	+	+	+	+	+	
intermedia Nyl.	+	+	+	+	+	+
fastigiata (Pers.) Ach. emend.	+	+	+	+	+	+
fastigiata v. subfastigiata (Nyl.)		+	+	+	+	
fastigiata v. subampliata (Nyl. emend)						
Howe	—	—	+	+		
canaliculata (Fr.) Herre	+	+	—	+		+
Willeyi Howe				+	+	+
stenospora Mull. Arg.				+		
dilacerata (Hoffm.) Wain.	—	—		+		
pollinariella Nyl.	+	+				

R. intermedia Nyl.

Thallus caespitose (1.5cm. alt.), virescent, branches compressed, apices erose. Apothecia unobserved. On stone walls.

R. fastigiata (Pers.) Ach. emend.

Thallus caespitose (3cm. alt.), virescent, branches compressed, laciniate. Apothecia discoid, entire, scattered, disk pale. Spores straight 9-18 x 4-7 μ . On trees, shrubs, old wood, rarely on rocks.

R. fastigiata var. subfastigiata (Nyl.) comb. nov.

Thallus caespitose (2cm. alt.), virescent, branches compressed, channeled. Apothecia as above, subterminal or terminal. Spores as above. On trees (*Populus*), etc.

R. fastigiata var. subampliata (Nyl. emend.) Howe.

Thallus caespitose (2cm. alt.), virescent, branches compressed, wide. Apothecia as above, lateral. Spores as above. On trees (*Fraxinus*), etc.

R. canaliculata (Fr.) Herre.

Thallus caespitose (3cm. alt.), virescent, branches linear, connivocaliculate. Apothecia as above, subterminal, spurred. Spores as above. On trees.

GENUS: THAMNOLIA Ach.

Cortex terete, medulla arachnoid, axis hollow. Apothecia unknown.

Me. N. H. Vt. Mass. R. I. Conn.

Thamnolia vermicularis (Sw.) Ach.	+
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Note: In a collection of Concord lichens collected by Horace Mann, which has recently come into my hands, is a specimen of *Usnea angulata* Ach. The following should therefore be added to the foregoing paper, as well as the table below which will hereafter be published with each genus:

U. angulata Ach.

Thallus pendulous (8cm. alt.), virescent, branches angular, smooth, simple, fibrils stipate, subequiform. Apothecia unobserved. On trees.

TABLE OF DISTRIBUTION.

The sign + indicates that an herbarium specimen has been seen; the sign — that a reliable printed record has been found.

	Me.	N.	H.	Vt.	Mass.	R.	I.	Conn.
<i>Usnea longissima</i> Ach.	+	+		+				
<i>angulata</i> Ach.			+	+	+			+
<i>plicata</i> (L.) Web.	+	+						
<i>plicata</i> v. <i>Huei</i> (Boist.) Howe								
(= <i>ceratina</i> f. <i>subplicata</i> Merr.)	+							+
<i>barbata</i> (L.) Web. (= <i>dasypoga</i>								
(Ach.) Nyl.)	+	+		+	—			
<i>barbata</i> v. <i>stricta</i> (Schaer.) Howe								
(= <i>dasypoga</i> v. <i>plicata</i> (Hoffm.) Hue	+	—						
<i>florida</i> (L.) Web.	+	+		+	+	+	+	+
<i>florida</i> f. <i>hirta</i> (L.) Ach.	+	+		+	+	+	+	+
<i>trichodea</i> Ach.	+	+		—	+	+	+	+
<i>trichodea</i> v. <i>ciliata</i> Mull. Arg.	+							
<i>Letharia thamnodes</i> (Flot.) Hue	+	+		+	+			

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A LIST OF MAMMALIA COLLECTED AT
CONCORD, MASS.

BY JACK C. WHITE.

The following is a list of Mammalia collected since 1901 at Concord, Massachusetts. All the specimens here named, unless otherwise indicated are represented in the collection in the Thoreau Museum of Natural History.

In the Bulletin of the Middlesex School Natural History Society, No. 7, December, 1905, (Supplement to THE ANVIL) was published the first list of local Mammalia, numbering twenty-two species.

MAMMALIA.

ORDER: UNGULATA.

Family: *Cervidae*.

Odocoileus virginianus borealis (Miller) G. M. Allen.
Northern Virginia deer.

Now rare in Concord, probably due to the annual open season.

ORDER: GLIRES.

Family: *Sciuridae*.

Sciurus carolinensis leucotis (Gapper) Allen.
Northern gray squirrel.
Common.

Sciurus hudsonicus (Erxleben) Allen.

Northern red squirrel.

Common.

Tamias striatus lysteri (Richardson) Merriam.

Chipmunk.

Abundant.

Arctomys monax (Linne) Gmelin.

Woodchuck.

Very common, throughout the meadow lands.

Sciuropterus sabrinus macrotis Mearns.

Canadian flying squirrel.

Rare. Found generally in the proximity of water.

Family: *Muridae*.

Mus musculus Linne.

House mouse.

Common.

Mus norvegicus Erxleben.

Norway rat; wharf rat.

Common both in buildings and along brooks.

Peromyscus leucopus noveboracensis (Fischer) Miller.

Eastern white-footed mouse.

Common in the woodlands. Several have been trapped in buildings.

Microtus pennsylvanicus (Ord) Rhoads.

Meadow mouse.

Very common in the meadows and farm lands.

Fiber zibethicus (Linne) Cuvier.

Muskrat.

Common in the ponds and rivers.

Family: *Zapodidae*.

Zapus hudsonius (Zimmermann) Coues.

Hudson Bay jumping mouse.

Not uncommon in the mowings. One was caught June 1, 1905, by J. L. Coolidge, 3d.; two were taken in October, 1914 by S. Hoar.

Family: *Erethizontidae*.

Erethizon dorsatum (Linne) F. Cuvier.

Canada porcupine.

Very rare. One was shot on Punkatasset Hill in Nov. 1913.

Family: *Leporidae*.

Lepus americanus virginianus (Harlan) Allen.
Eastern varying hare; white rabbit.
Very rare.

Lepus floridanus transitionalis (Bangs) Allen.
Northern cottontail.
Common.

ORDER: FERAEE.

Family: *Canidae*.

Vulpes fulvus (Desmarest) De Kay.
Red fox.
Common throughout the farm lands.

Family: *Mustelidae*.

Lutra canadensis (Schreber) Sabine
Otter.

Very rare in the river. One was caught March 1, 1911,
by S. F. Mears in Showshine Brook, Billerica.

Mephitis putida (G. Cuvier) Allen.
Eastern Skunk.
Very common.

Putorius vison (Schreber) Gapper.
Mink; Little black mink.
Not very common in the ponds, rivers, and brooks.
Putorius cicognanii (Bonaparte) Richardson.
Little brown weasel.
Uncommon along the brooks.

Family: *Procyonidae*.

Procyon lotor (Linne) Storr.
Raccoon; coon.
Now rare.

ORDER: INSECTIVORA.

Family: *Soricidae*.

Blarina brevicauda talpoides (Gapper) Bangs.
Eastern short-tailed shrew.
Common in the fields.

Family: *Talpidae*.

Condylura cristata (Linne) Desmarest.
Star-nosed mole; Black mole.
Rare.

ORDER: CHIROPTERA.

Family: *Vespertilionidae*.

Myotis subulatus (Say) Miller.
Say's bat; little brown bat.
One was taken Oct. 6, 1914.

Vespertilio fuscus Beauvois.
Large brown bat; house bat.
Very common.

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(Continued.)

GENUS: COELOCAULON Link.

Cortex terete, medulla arachnoid, axis hollow. Apothecia entire, disk dark. Asci clavate, 8 spores. Spores ellipsoid, monoblast, hyaline.

Me. N. H. Vt. Mass. R. I. Conn.

Coelocaulon aculeatum (Schreb.) Link. - +

GENUS: CETRARIA Ach.

Cortex bifacial, medulla arachnoid, axis arachnoid. Apothecia sub-crenulate or entire, disk dark. Asci clavate, 8 spored. Spores ellipsoid, monoblast, hyaline.

Me. N. H. Vt. Mass. R. I. Conn.

Cetraria islandica (L.) Ach.					+
islandica v. crispa Ach.		+	+	+	+
hiascens Th. Fr.		+	+		
cucullata (Bell.) Ach.		+	+		
nivalis (L.) Ach.		+	+		

TRIBE: ALECTORIEAE Hue

Cortical structure simple (hyphae longitudinal to axis), medulla arachnoid.

GENUS, ALECTORIA Ach. pro parte

Cortex terete or subterete, medulla arachnoid, axis arachnoid or

hollow. Apothecia entire, disk pale or dark. Asci clavate, 2-8 spored. Spores ellipsoid, monoblast, hyaline or colorate.

	Me.	N.	H.	Vt.	Mass.	R.	I.	Conn.
<i>Alectoria chalybeiformis</i> (L.) S. F. Gray.	+	+	+	+	+	+	+	
bicolor (Ehrh.) Nyl.	+	+						
jubata var. implexa (Hoffm.) Ach.	+	+	+	+				
sarmentosa Ach.	+	-						

SECTION: BRYOPOGON (Link) Th. Fr.

Asci containing 8 hyaline spores.

Thallus dark (brown)

Erect or prostrate

Unicolored *chalybeiformis*

Bicolored *bicolor*

Pendulous v. *implexa*

Thallus light *sarmentosa*

A. chalybeiformis (L.) S. F. Gray

Thallus caespitose (4cm. alt.), brown or black, branches flexuous, terete, wiry, nitidous, spinulose, soraliolate. Apothecia unknown. On trees and old wood.

A. jubata var. *implexa* (Hoffm.) Nyl.

Thallus pendulous (8 cm. alt.), brown, branches terete, nitidous, filiform throughout. Apothecia unobserved. On trees.

SECTION: EUALECTORIA

Asci containing 2-4 colorate spores.

GENUS: TELOSCHISTES Norm.

Cortex terete to bifacial, medulla arachnoid, axis loosely arachnoid. Apothecia entire or hispid, disk orange. Asci clavate, 8 spored. Spores ellipsoid, polari-bilocular, hyaline.

	Me.	N.	H.	Vt.	Mass.	R.	I.	Conn.
<i>Teloschistes chrysophthalmus</i> (L.) Th. Fr.						+	+	

T. chrysophthalmus (L.) Th. Fr.

Thallus caespitose (2cm. alt.), grayish-yellow, branches subterete or bifacial. Apothecia discoid, hispid, disk orange. Spores 11-17 x 6-10 μ . On trees.

Note: Eckfeldt records for *A. ochroleuca* (Ehrh.) Nyl., and *A. lata* (Tayl.) Hue from Mt. Desert, Me., and Tuckerman's of *A. ochroleuca* var. *cinnamati* (Fr.) Nyl. from the White Mountains need verification. Since Part II of the present paper was published I have found a reliable printed record for *Thamnotia vermicularis* from Vermont and Maine.

GROUP: RADIATI-STRATOSAE Hue*.

Thallus composed of erect radially symmetrical podetia on a dorsiventral primary thallus; attached to substratum without rhizoids. Gonidia homoeomerous.

FAMILY: CLADONIACEAE Zahlbr.

Thallus composite: Fruticose and foliose. Gonidia *protococcoid*. Apothecia lecidienne. Spores simple to quadrilocular, hyaline.

GENUS: STEREOCAULON Ach.

Thallus composite, podetia solid, cortex cylindrical, ecorticate, rarely on a dorsiventral, primary thallus. Apothecia emarginate, disk dark. Spores fusiform or acircular, plurilocular, hyaline.

Primary thallus present

Spores 4μ wide, ends blunt; podetia frequently ending in soredia *pileatum*

Spores 2.7μ wide, ends pointed; podetia never ending in soredia *condensatum*

Primary thallus absent

Squamules palmate-digitate

Podetia glabrous or faintly tomentose, cephalodia with *Stigonema*

Podetia loosely branched and spreading *paschale*

Podetia in compact cushions v. *conglomeratum*

Podetia more or less densely tomentose, cephalodia with *Nostoc*

Podetia repeatedly branched *tomentosum*

Squamules of some other type

Squamules coralline *coralloides*

Squamules umbilicate or coarsely granular

Podetia glabrous, cephalodia with *Stigonema*. *denudatum*

Podetia tomentose, cephalodia with *Nostoc* *alpinum*

* Note: Through the kindness and with the permission of Dr. L. W. Riddle I am embodying his keys and distributional charts for the genera of this Group. Dr. Riddle has kindly brought them up to date since their original publication in the Botanical Gazette (50 : 285-304. 1910) and Rhodora (11 : 212-219. 1909).

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
<i>Stereocaulon alpinum</i> Laur.	+	+				
condensatum Hoffm.	—			+		+
ceralloides Fr.	+	+	+	—		
denudatum Flke.		+	+	—		
nanodes Tuck.*		+				
paschale (L.) Ach.	+	+	+	+		+
var. conglomeratum Fr.	+	+	+	+		
pileatum Ach.	+	+	+	+		
tomentosum Fr.	+	+	+	+		+

S. pileatum Ach.

Thallus fruticose (1 cm. alt.) cinereus, primary thallus persistent, granular; podetia simple, glabrous, squamules coralline-granular often terminally soresiate. Apothecia globose, emarginate, terminal. Spores 16.5-29 x 3.5-5 μ . On rocks.

S. paschale (L.) Ach.

Thallus caespitose (6 cm. alt.), cinereus, primary thallus absent; podetia branched throughout, subglabrous, squamules palmate-digitate, or crenate-granulate. Apothecia globose, terminal or lateral. Spores 15-35 x 2.5-5 μ . On rocks or earth.

GENUS: *PILIPHORUS* (Tuck.) Th. Fr.

Thallus composite, podetia arachnoid or hollow, cortex cylindrical, ecorticate on a dorsiventral primary thallus. Apothecia emarginate, disk dark. Spores ellipsoid or fusiform, simple hyaline.

	Me.	N. H.	Vt.	Mass.	R. I.	Conn.
<i>Piliphorus cereolus</i> var. <i>Fibula</i> Tuck.	—	+				

* Not included in the Key as no other specimens beside the type have ever been collected. *S. condensatum* Hoffm. has been collected in South Sudbury.

QH 507.73
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P963
NH
MARCH 25, 1915.

27.73
VOL. I, pp. 42-43.

PROCEEDINGS
OF THE
THOREAU MUSEUM OF NATURAL HISTORY.
MIDDLESEX, SCHOOL,
CONCORD, MASSACHUSETTS.

A LIST OF *ARANEIDA* COLLECTED AT
CONCORD, MASS.

BY J. H. DEMPSEY.

The following is a preliminary list of Spiders from Concord, Massachusetts, collected since 1901. This list comprises only a small portion of the species that should be found in the township. All the specimens here given are represented in the collection of the Thoreau Museum of Natural History, and were determined through the kindness of Mr. J. H. Emerton of Boston.

ARANEIDA.

Family: *Uloboridae*.

Uloborus plumipes Lucas.

Family: *Dictynidae*.

Amaurobius sylvestris Emerton.

Family: *Drassidae*. Ground Spiders.

Gnaphosa brumalis Thorell.

conspersa Thorell.

Family: *Theridiidae*.

Theridion differens Emerton.

tepidariorum C. Koch.

Enoplognatha marmorata Simon.

Pedanostethus riparius Keyserling.

Family: *Argiopidae*.

Cornicularia auranticeps Emerton.

directa Emerton.

Lophocarenum spiniferum Emerton.

Bathyphantes minuta Emerton.

Pachygnatha brevis Keyserling.

Araneus insularis Simon.

trifolium Simon.

Family: *Thomisidae*.

Xysticus gulosus Keyserling.

Philodromus lineatus Emerton.

vulgaris Keyserling.

Family: *Agelenidae*. Field and Barn Spiders.

Agelena naevia Walckenaer.

Cicurina arcuata Keyserling.

brevis Emerton.

pallida Keyserling.

Hahnia cinerea Emerton.

Family: *Pisauridae*.

Dolomedes fontanus Emerton.

Family: *Lycosidae*. Ground Spiders.

Lycosa frondicola Emerton.

kochii Emerton.

lepida Montgomery.

nidicola Emerton.

pratensis Emerton.

rubicunda Montgomery.

Pardosa glacialis Thorell.

Family: *Salticidae*. Jumping Spiders.

Attus palustris Peckham.

Phidippus tripunctatus Emerton.